

West Salisbury Foundry & Machine Co. Inc.

Established 1884

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Where may one experience molten metal, flying sparks, chemistry, creativity, and craftsmanship under one roof? Answer: The West Salisbury Foundry of Salisbury Pennsylvania where old industrial processes combine with state of the art technology to continue a century and a half tradition in Somerset County, PA.

A foundry has operated in Somerset County since 1868 when 21 community stockholders invested in an enterprise that produced stoves, farm implements, saw mill equipment, iron railings, and a variety of other domestic products. In 1892, The Salisbury Foundry was purchased by Michael Knecht who had previously owned a blacksmith shop in the town. Mr. Knecht and his five sons became skilled workers and the business prospered to the extent that additional land was acquired in 1901. The business remained in the Knecht family until recent times. Today, The West Salisbury Foundry and Machine Company is under the direction of co-owners Scott Swanson and David Jardini with Blaine Knupp serving as Director of Operations.

Scott Swanson describes the current operation as one where a variety of custom products are engineered and produced. According to Scott, “We can make almost anything. Homeowners will inquire about old iron gates, rails, hinges, and other domestic products they want to be reproduced. Using the original pieces, patterns are created that will form the new cast products. We can even reproduce the imperfections of an original piece if the homeowner wants to maintain a certain appearance in the restoration of a house.” Six weeks is often required to produce a pattern and finished product, although sometimes a couple of days is all that is needed to satisfy a customer’s order.

The majority of the products cast at the foundry is for industrial applications and includes grates, resistant iron pipes, brake parts, flywheels, lathe equipment,





and parts for coal fired plants. Virtually any shape up to 1,350 pounds can be designed and cast by the employees.

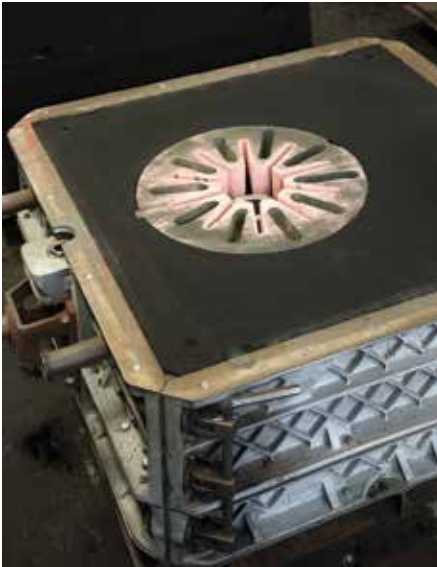
Foundries were always a plentiful part of the American industrial landscape until recent decades. While there are fewer foundry's today, there is a common misconception that nearly all domestic casting operations have closed. "There are at least 1,500 foundries still operating in the United States," stated Scott. "The midsized operations have been absorbed by the larger ones in recent years. We serve a niche market that succeeds through filling specialized orders that our dedicated workforce designs and casts."

The industrial process at the Salisbury foundry begins outdoors near an abandoned railroad where used brake rotors, rails, and assorted cast iron materials are collected and sorted for remelting in the furnace; such items are referred to as "charge materials." According to Scott, using the recycled materials is beneficial for a number of reasons, including the known chemistry of each item.

Top Left: The original building where furnaces were charged from above; the second floor is ground level on one side making it easier to bring in iron for melting.

Three Photos Above: "Charge" materials — Pig Iron (top), Railroad Rail Croppings (middle), and Brake Rotors (bottom).

Facing Page: Tapping the furnace into the ladle.



Top Left: Pin Lift Machine Molding.

Top Middle: Impression in the Green sand made from the pattern.

Top Right: Setting the Core.

Far Left: The core set in the Drag portion of the mold. The Drag is the bottom half of the mold and the Cope is the top part of the mold.

Left: The completed closed mold; Cope on top, Drag on bottom.

Upon demand, the recycled materials are moved indoors and placed near the furnace. Since 2002, workers have operated an induction electric furnace for the melting process. The newer model offers a more precise control of melt chemistry and emissions than the traditional brick lined cupola furnace that was fueled by coke.

A nearby core room is designed for making molds. As Scott noted, “This is something that cannot be learned from a book. Every mold has its own intricacies and there are many practical considerations in the process.” The molds must be precisely crafted according to customer specifications and the chemistry of the metals that will be poured into the cavity around them. Critical to the

process is angular sand that will form the required shape; its properties are preferred to spherical sand that possesses less binding qualities.

The melting floor conjures up images of the iron industry that was closely associated with the Industrial Revolution in Europe and the United States during the 1800s. The charged (heated) induction furnace typically warms the metals to more than 2000 degrees, causing an intense heat to develop. While the imagery may be of the past, the Salisbury Foundry uses modern technology and information to develop recipes for the scrap materials that achieves a chemistry for carbon, sulfur, silicon, chrome, and phosphorous. “Tapping the furnace,” or pouring the liquid



Above: Induction furnace melting the Charge of scrap material.

Top Right: The Melter taking a Sample Temperature (temperature at this point is 2769.3 F).

Right: Tapping the Furnace into the Ladle.

from the furnace, causes a fiery shower of sparks as it reaches a ladle. Transfer of the molten liquid from the ladle to a mold is the definition of the casting process. The hot molds are allowed to cool overnight before cleaning and shipment of the piece is accomplished.

Skilled workers have been a key to the success of the West Salisbury Foundry for decades. Since the skills required in foundries are not part of the formal secondary educational curriculum, on site apprenticeships and training are necessary. "We have an extremely dedicated workforce. Many of our employees began working here after high school and they are loyal to their jobs and the community," stated

Scott. Intergenerational family connections at the company stretch back several generations and facilitate the retaining of skills.

To capitalize on the skilled workforce, the owners instituted a team based management structure which means all 16 employees become part of the decision making process. Employees approach new projects as a team that will decide the most cost effective way to serve customers. This structure has resulted in higher quality products and increased productivity. As a result, employees are provided with full insurance benefits and profit sharing incentives.



Top Photo: Scraping the Slag off the ladle. The Slag is the impurities that float in the molten iron.

Bottom Photo: Pouring the Iron from the Ladle into the Mold through the Sprue (the hole where the iron fills into the mold).



Above: The Shot blaster after the castings shake out from the mold but before the grinders remove the gates and riser.

Inset: Sample Castings Paddle Wheels for conveyor.



The West Salisbury Foundry has maintained a loyal customer base in the United States and Canada. Ironically, some machinery parts cast at Salisbury are shipped to Asia for inclusion in machinery that is exported to the United States.

The West Salisbury Foundry is open five days a week at its 700 Tub Mill Road location. Customers are welcome to visit the office for consultation and additional information about the casting processes. See www.westsalisburyfoundry.com.

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